Armed Forces College of Medicine

AFCM

Diseases of urinary bladder

Prof Dr Nermeen Salah

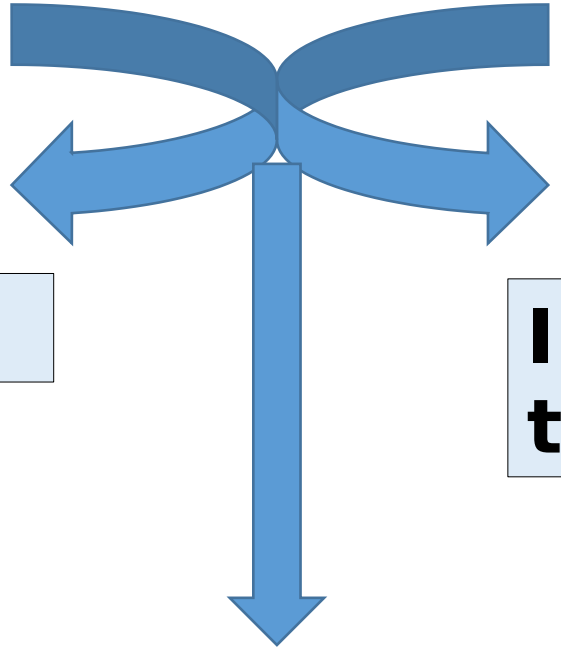
Lecture (6)
Tumors of urinary bladder & Hematuria

INTENDED LEARNING OBJECTIVES (ILO)

By the end of this lecture the student will be able to:

1. Classify tumours of the urinary bladder
2. Determine the aetiology and predisposing factors of urinary bladder carcinoma
3. Correlate the clinical picture with the histopathological features and other lab investigations in bladder cancer
4. Outline the effects and complications of urinary bladder carcinoma
5. List different causes of hematuria

Tumors of urinary bladder



I-Epithelial tumors

II-Non epithelial tumors

III-Secondary tumors

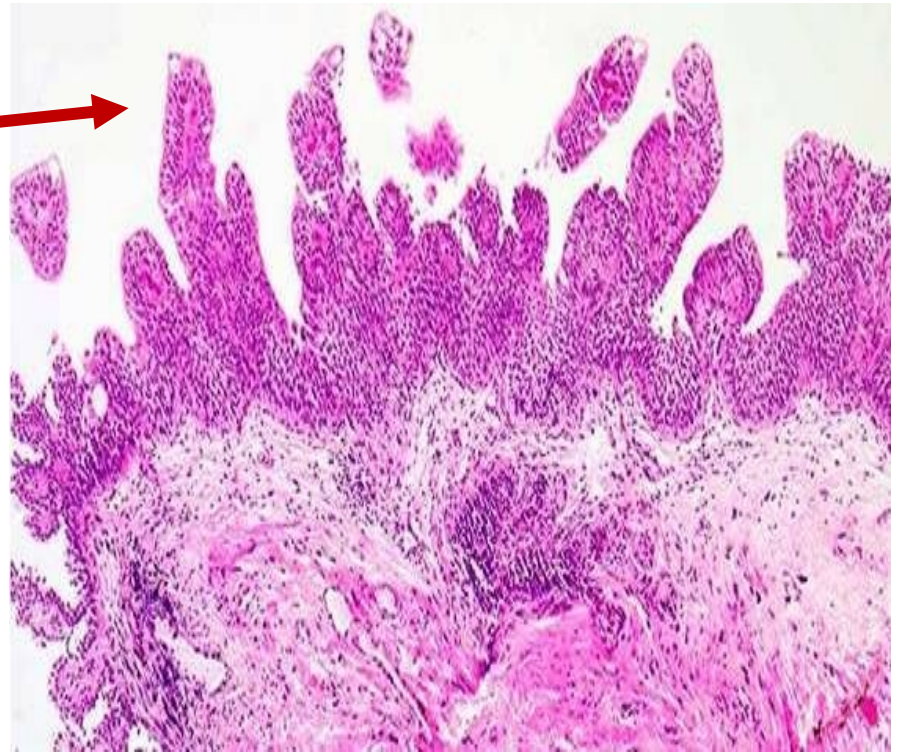
A. **Urothelial (Transitional) tumours**
B. **Squamous cell carcinoma**
C. **Adenocarcinoma**

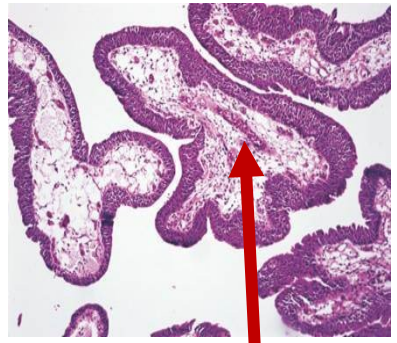
Epithelial tumours

Villous papilloma

Papillae

- Covered by layers of urothelial cells **< 7** layers regularly arranged with **no criteria of malignancy**)
- Have cores of fibro vascular CT

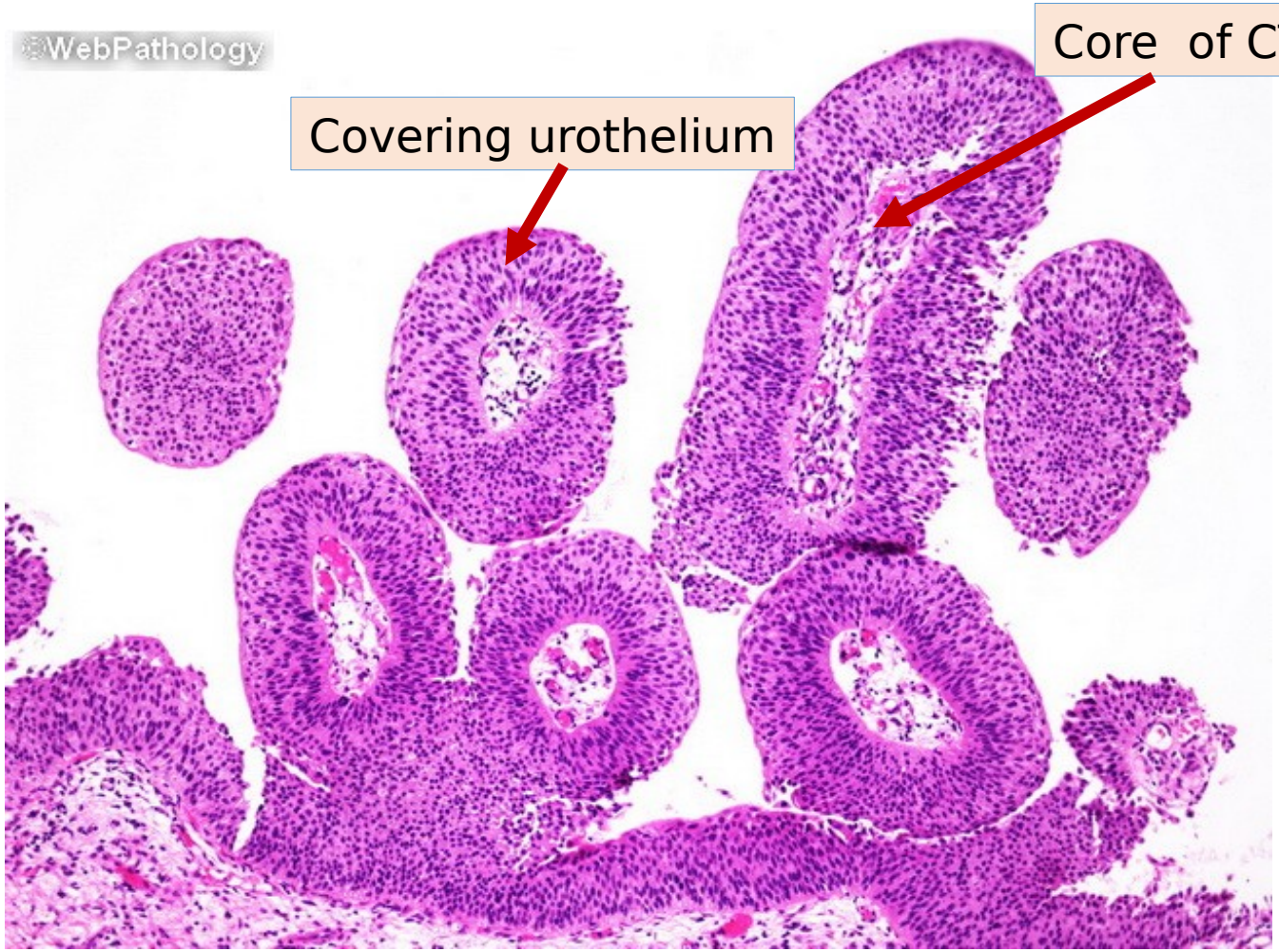




https://www.123rf.com/photo_97197646_microscopic-image-showing-a-urinary-bladder-papilloma-the-papillae-are-coated-with-normal-transition.html

Papillary urothelial neoplasm of uncertain malignant potential

- Similar to papilloma except for urothelial thickening.
- **7-10** layers of urothelial cells with orderly appearance line the papillary fronds



https://www.webpathology.com/image.asp?case=53&n=9

Carcinoma of urinary bladder

Age:

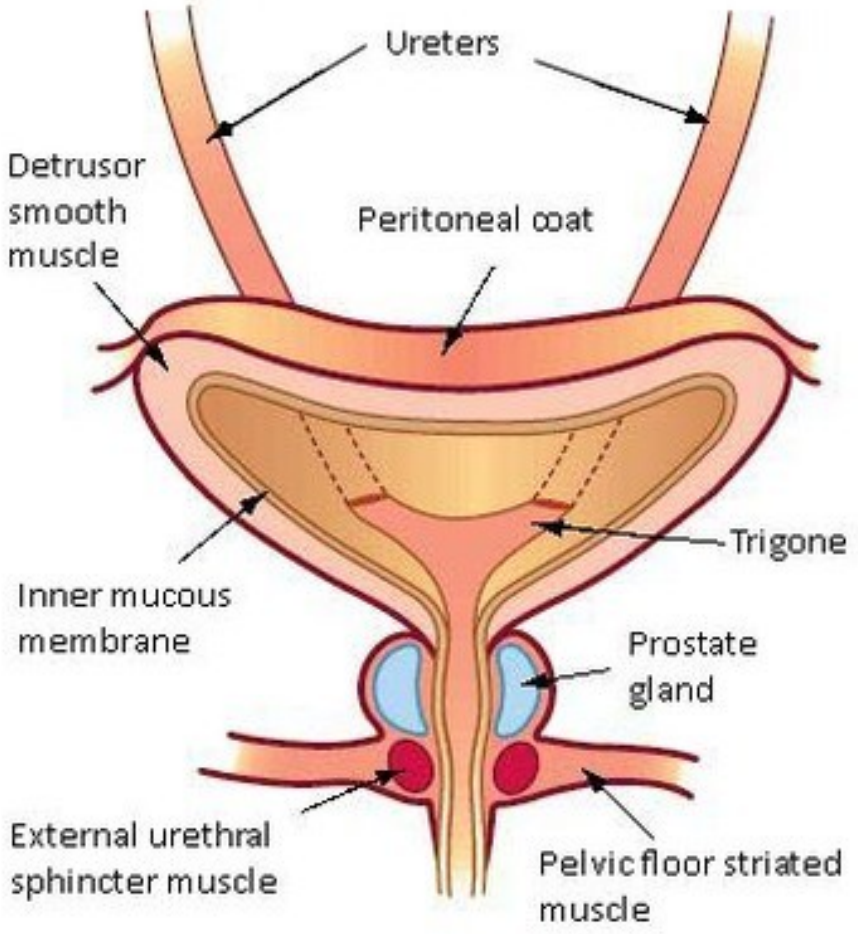
- Between 50 - 80 years
- More common in Egypt at **younger age due to Bilharziasis**

Sex:

- More common in **males** than females

Sites:

- **Lateral , posterior walls and trigone** :



http://votre-pharmacien.fr/pharmacie-2/le-botox-contre-lincontinence-urinaire

Carcinoma of urinary bladder

Predisposing factors

Schistosoma haematobium (Bilharzial cystitis)

- **Most common** predisposing factor in Egypt

Chemical carcinogens

- Petrochemicals
- Cigarette smoking
- Aniline dyes & Azo dyes

Other risk factors

- Villous papilloma
- Stones
- Chronic cystitis

Bilharzial cystitis

Dense fibrosis In long standing severe cases

Urothelial changes very common in response to chronic irritation

1-Hyperplasia → **2-Brunn's nests** → **3-Cystitis cystica** → **4-Cystitis glandularis**

5-Squamous metaplasia and leukoplakia

6-Dysplasia and carcinoma in situ

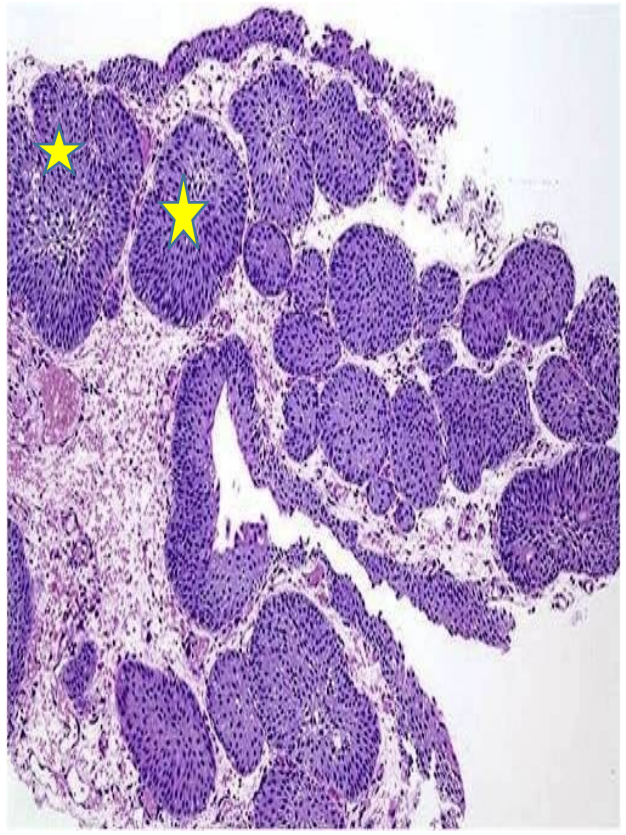
Bilharzial cystitis

1-Brunn’s nests

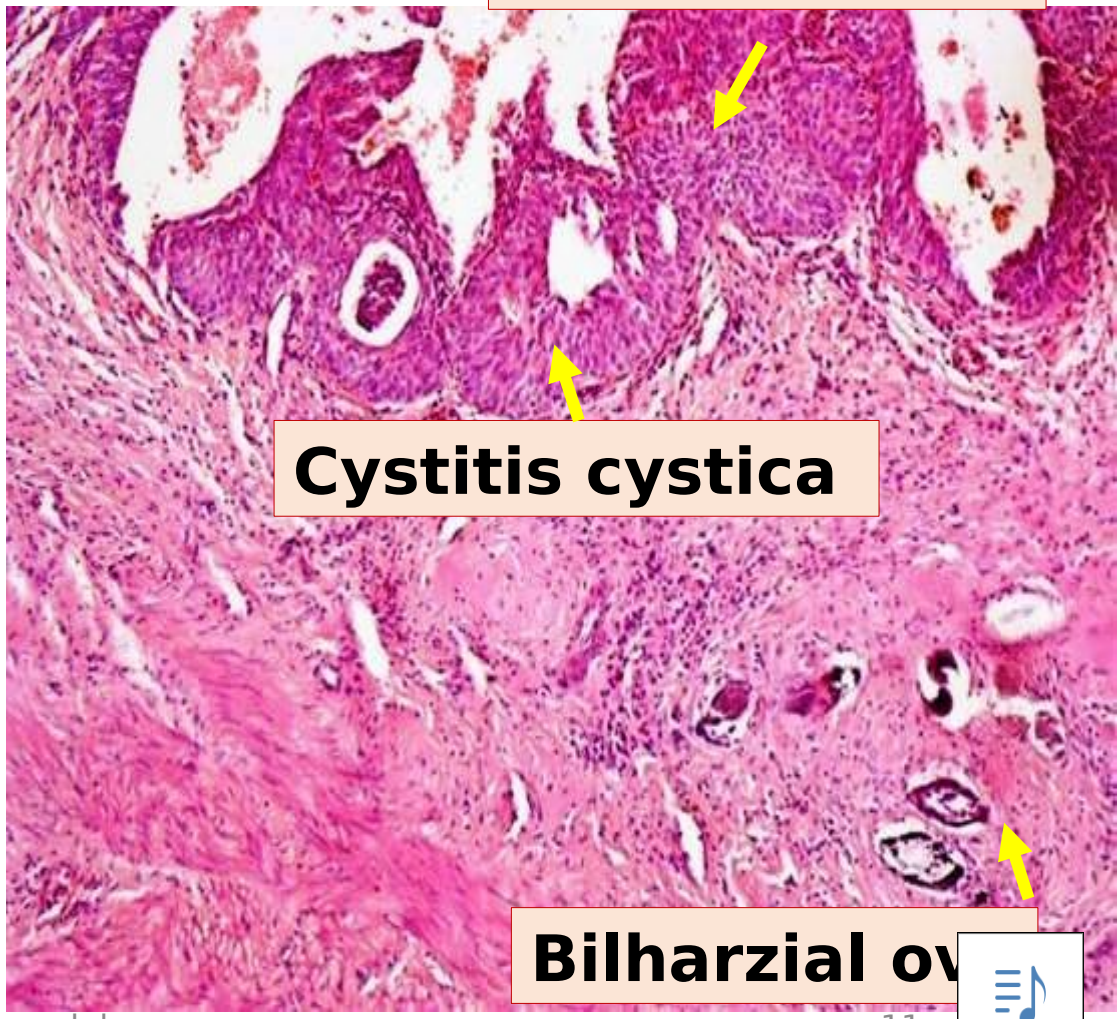
- Solid buds of transitional cells in submucosa due to focal dipping of hyperplastic urothelium.

2-Cystitis cystica

- Cysts lined by transitional epithelium due to central degeneration in Brunn’s nests



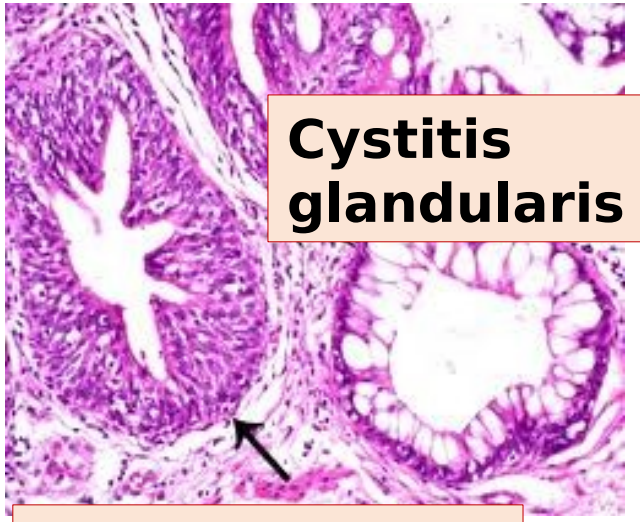
Brunn’s nests



Bilharzial cystitis

3-Cystitis glandularis (precancerous)

- Cysts lined by mucin secreting columnar cells similar to colonic epithelium
- Due to metaplasia of cystitis cystica.

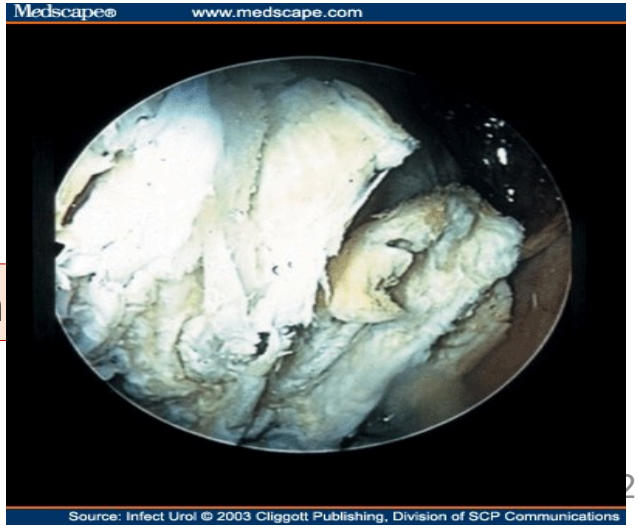


Cystitis glandularis

Cystitis cystica

4-Squamous metaplasia and leukoplakia (precancerous)

- Squamous metaplasia is very common.
- May be associated with leukoplakia (extensive keratinization and appear thick white patches).



Leukoplakia

Carcinoma of urinary bladder

Schistosoma haematobium *(Most common predisposing factor in Egypt)*

- **Development of *Bilharzial urothelial precancerous lesions* as**
  - ✓ Cystitis glandularis
  - ✓ Squamous metaplasia
  - ✓ Leukoplakia
  - ✓ Dysplasia

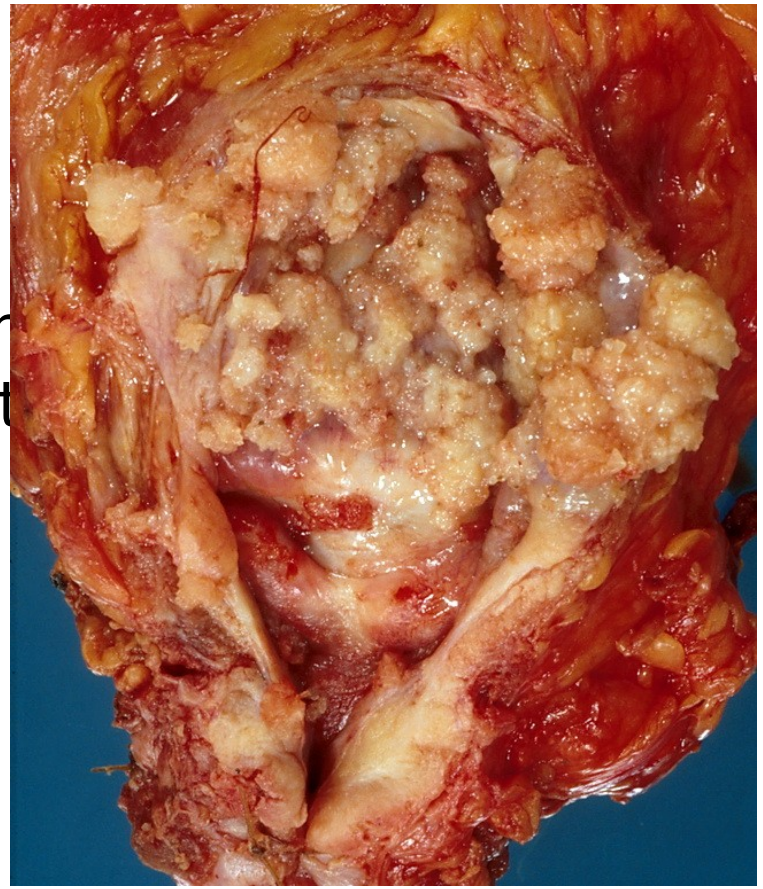
- ***Tryptophan metabolites*** released from worms into blood and excreted in urine are carcinogenic

- Secondary infection of bilharzial bladder is common.
  Gram negative bacteria as E coli change urinary nitrites and nitrates

Carcinoma of urinary bladder

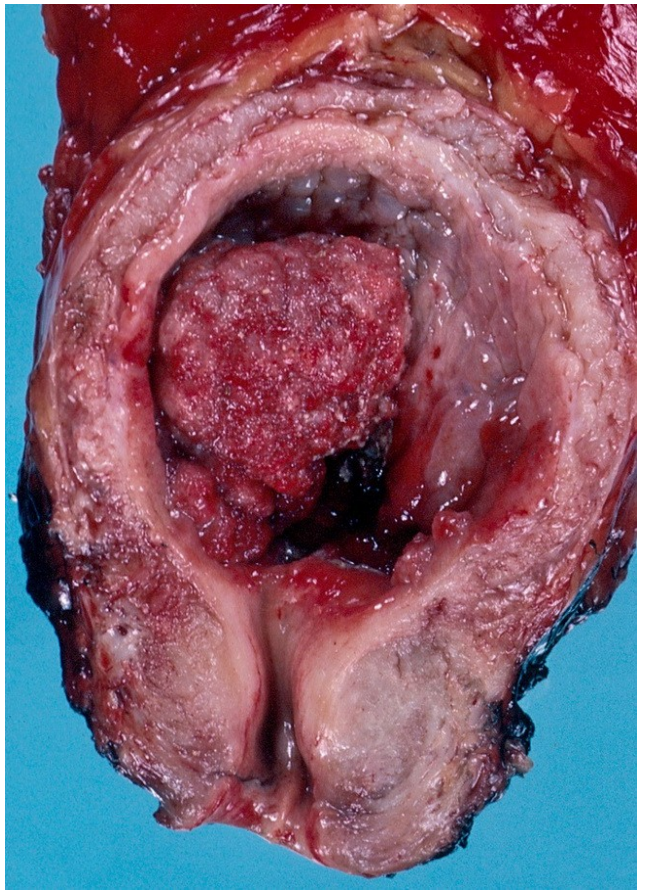
Gross

- **Exophytic pattern**
  - Papillary pattern (more comm
  - Polypoid or cauliflower fungat pattern
- **Endophytic pattern**
  - Ulcerative pattern
  - Infiltrative pattern
- **Combined pattern**



https://www.slideshare.net/habrolafzam/8-bladder-tumor

Papillary

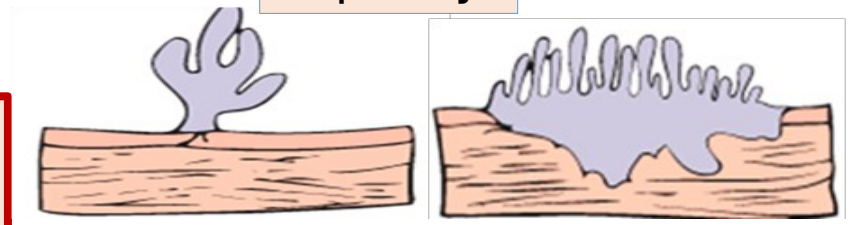


https://www.webpathology.com/case.asp?case=56

Cauliflower fungating

Carcinoma of urinary bladder

Papillary



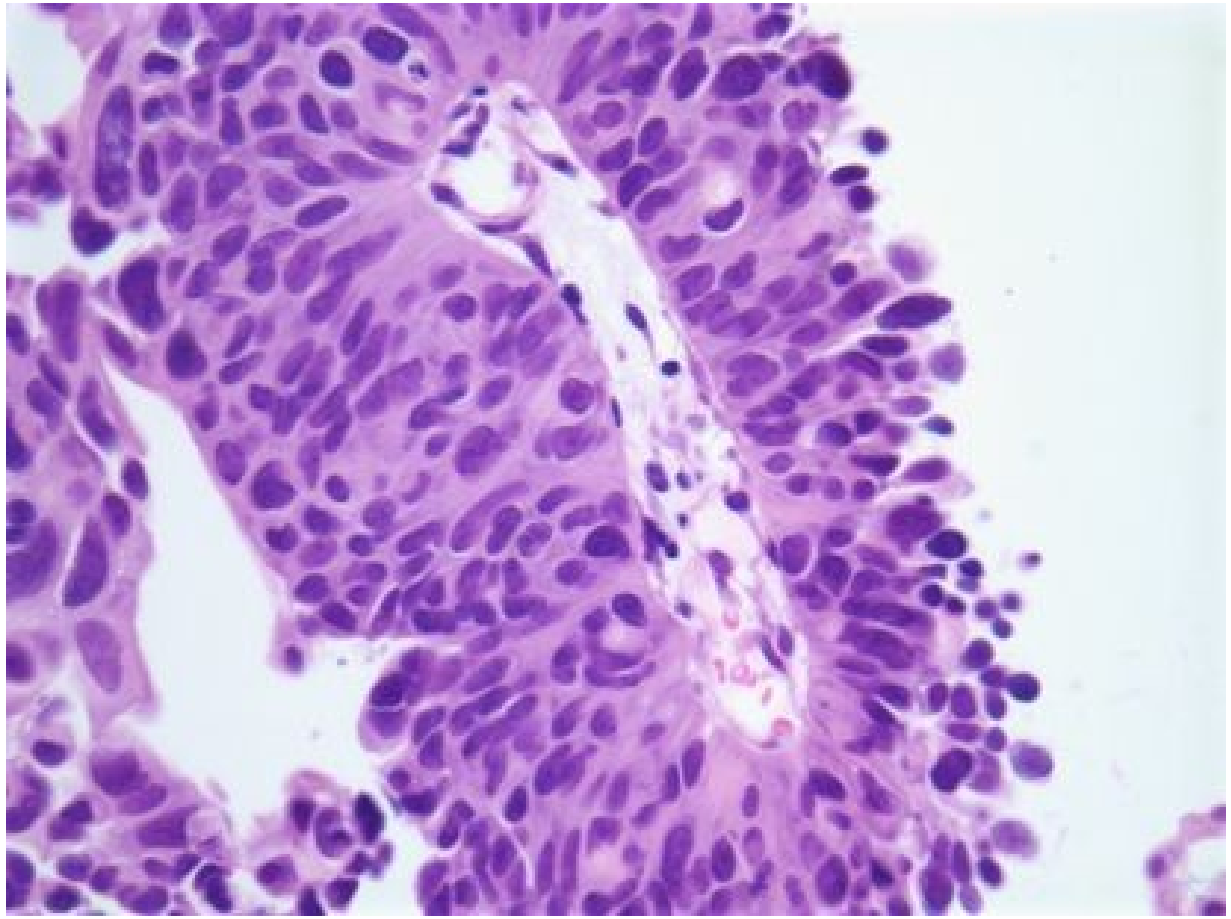
Flat

Mic

A-Urothelial carcinoma

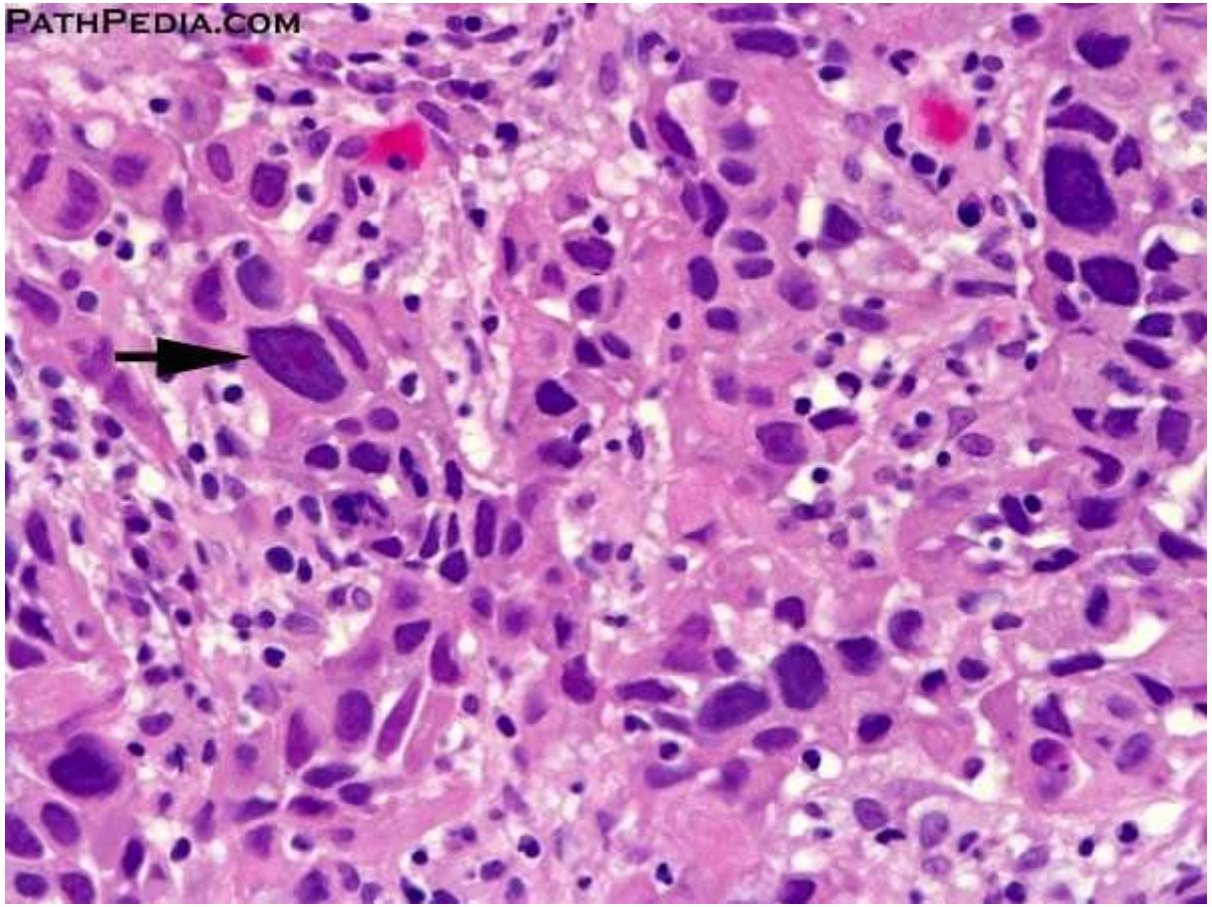
Papillary type	Solid Non papillary type:
Exophytic finger like projections with thin fibrovascular cores covered by several layers of malignant urothelial cells	Malignant urothelial cells form **solid groups**
Malignant cells show **low or high grade** nuclear anaplasia	Malignant cells commonly show **high grade** nuclear anaplasia
Malignant cells may or may not	Malignant cells invade lamina

Carcinoma of urinary bladder



https://www.nature.com/articles/modpathol2008235/figures/15

Papillary urothelial carcinoma



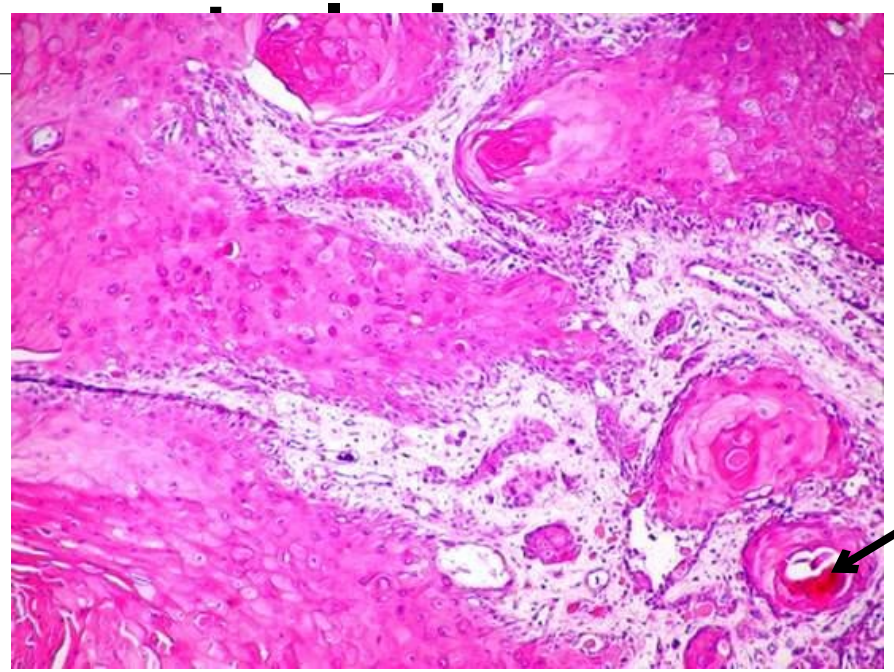
https://www.pathpedia.com/education/eatlas/histopathology/urinary_bladder/urothelial_carcinoma-high-grade.aspx

Solid Non papillary urothelial carc

Carcinoma of urinary bladder

B-Squamous cell carcinoma

Arises on top of squamous

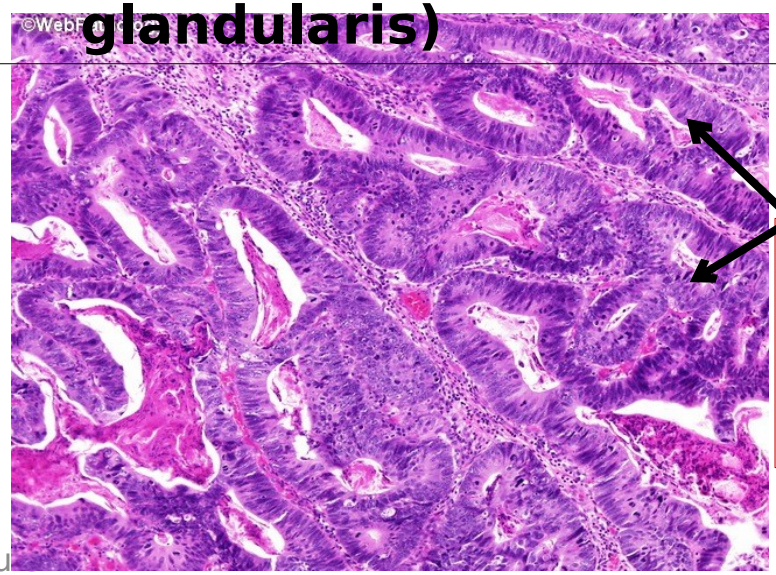


Cell nest = Keratin pearls

https://www.webpathology.com/

C-Adenocarcinoma

Arises from
A. Urachus or
B. On top of glandular metaplasia (cystitis glandularis)



Malignant Glands = acini

https://www.webpathology.com

Carcinoma of urinary bladder

Bilharzial carcinoma

Non Bilharzial carcinoma

Histologic types

1-Squamous cell carcinoma

2-Urothelial/ Transitional cell carcinoma (TCC)

3-Adenocarcinoma

1-Urothelial/transitional carcinoma (commonest)

2-Adenocarcinoma

3-Squamous cell carcinoma

Carcinoma of urinary bladder

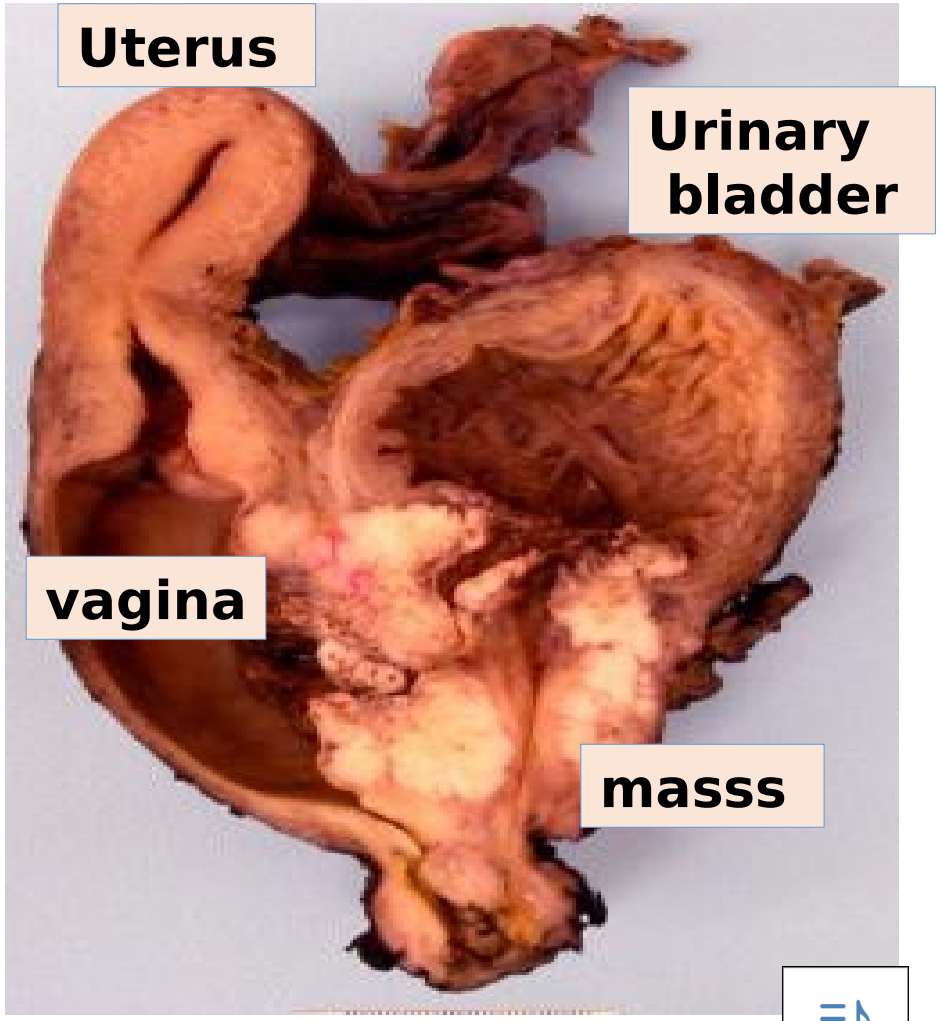
Effects and complications

1-Spread

- **Direct:** to prostate , seminal vesicles, ureters, rectum , vagina.

- **Lymphatic :** to iliac and para-aortic lymph nodes.

- **Blood**
  - late
  - to lungs , liver, bone



https://emedicine.medscape.com/article/438262-overview

Carcinoma of urinary bladder

2-Urinary obstruction

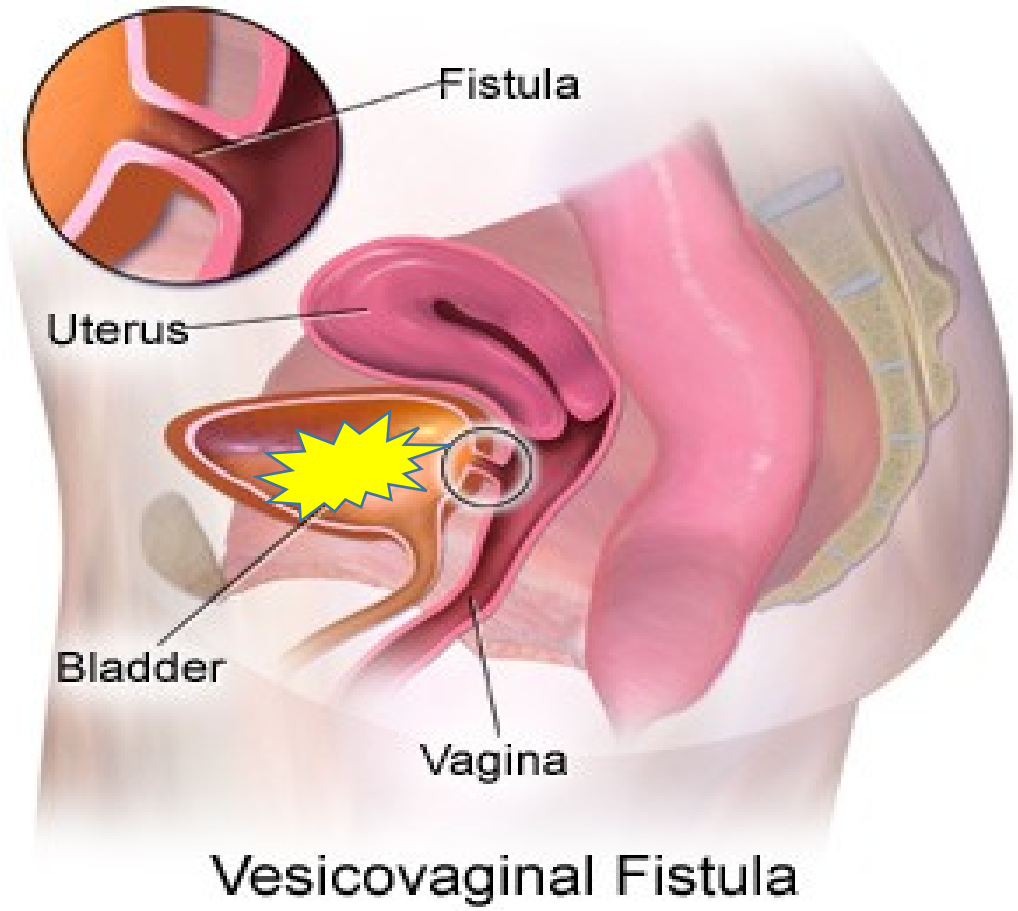
- Hydroureter
- Hydronephrosis
- Retention of urine
- Renal failure

3-Infection

- Cystitis
- Pyelonephritis
- Pyoureter
- Pyonephrosis

4-Haematuria

5-Fistula formation with rectum or vagina due to direct spread



Vesicovaginal Fistula

https://en.wikipedia.org/wiki/Vesicovaginal_fistula

II-Non Epithelial tumors

Benign

1. Fibroma
2. Neurofibroma
3. Angioma
4. Leiomyoma

Malignant

1-Sarcoma
- Leiomyosarcoma
- Rhabdomyosarcoma
- Angiosarcoma

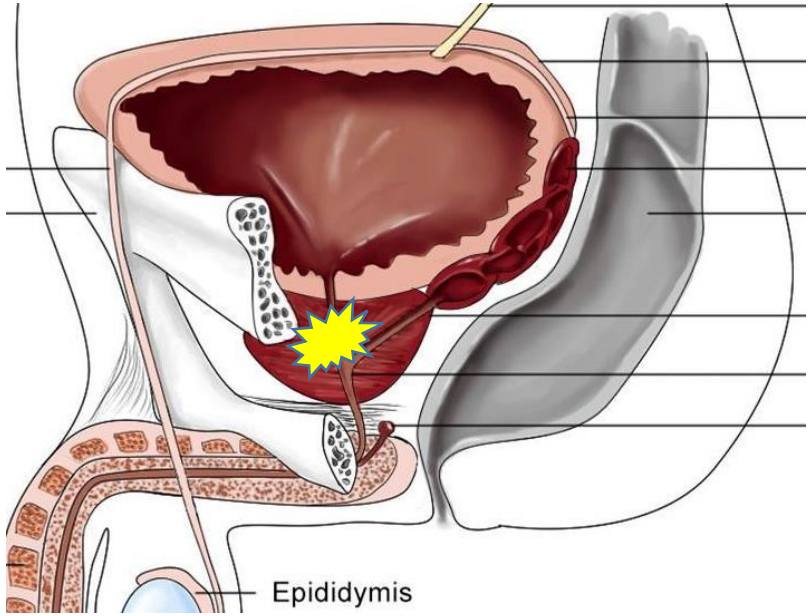
2-Lymphoma

III-Secondary tumors

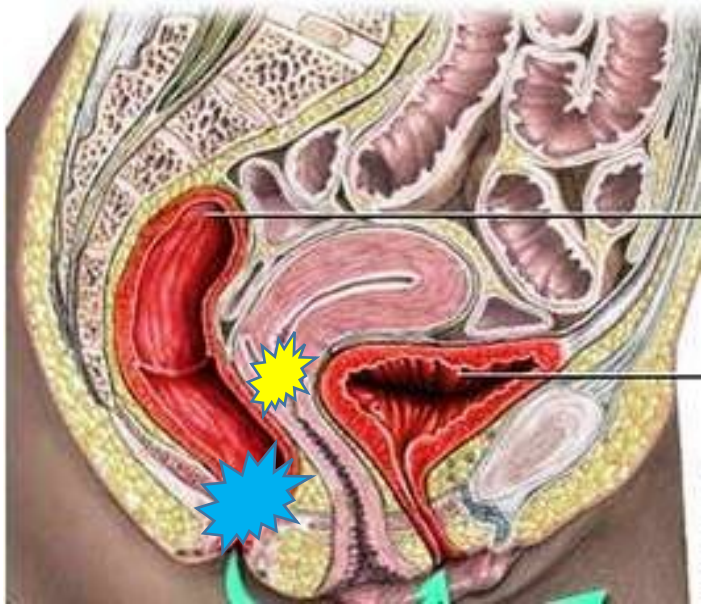
1. Direct spread

from

- ❑ Cancer prostate
- ❑ Cancer rectum
- ❑ Cancer uterine cervix



https://step1.medbullets.com/renal/112038/bladder--urethra-anatomy



http://owensborohealthse3.adam.com/

2. Transluminal implantation

from

- ❑ Urothelial carcinoma of

Male

Female

Haematuria

Definition:

Blood passing in urine

https://hasshe.com/blood-in-urine-5b7aeacc2756dd6f6c815f73

Causes

1-Pre-renal causes

- Hypertension
- Blood diseases as leukemia
- Vitamin C & K deficiency
- Drugs as salicylates and anticoagu

Haematuria

2-Renal causes

- **Congenital** : polycystic kidney
- **Inflammatory**
  - Nephritic syndrome as acute post streptococcal glomerulonephritis
  - Acute pyelonephritis
- **Neoplastic** :
  - Renal tumours as hypernephroma
- **Vascular disorders** :
  - Chronic venous congestion and renal infarction
- **Traumatic** :
  - Kidney injury due to accidents

Haematuria

3-Post -renal causes

- **Congenital** : Bladder diverticulum
- **Inflammatory**
  - **Bilharziasis:** **One of the most common causes of hematuria in Egypt (terminal hematuria)**
  - Acute cystitis
- **Neoplastic** :
  - Tumours of renal pelvis, ureter or bladder (carcinoma)
- **Vascular disorders** :
  - chronic venous congestion
- **Traumatic** :
  - Traumatic injury by **stones** (**common cause of**

Quiz

All of the following are causes of hematuria <u>EXCEPT</u>

A. Urinary stones
B. Cystitis
C. Nephrotic syndrome
D. Leukemia
E. Acute post streptococcal glomerulonephritis

Quiz

All of the following are causes of hematuria EXCEPT

A. Urinary stones
B. Cystitis
C. Nephrotic syndrome
D. Leukemia
E. Acute post streptococcal glomerulonephritis

SUGGESTED TEXTBOOKS

1. Robbins basic pathology 10th edition, 2018. Chapter 18: Male genital system and lower urinary tract.

2. Kaplan step 1 pathology lecture notes. Chapter 15: Renal pathology; 2017 (P.157-158)


Thank
you!